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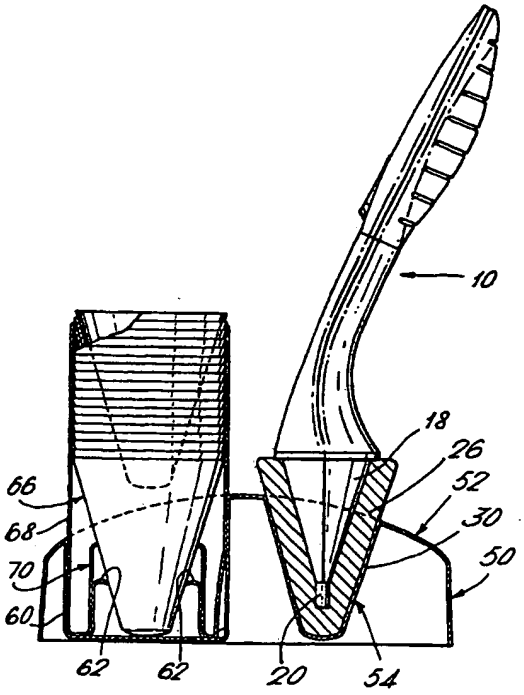
(54) Title: A CLEANING TOOL AND CLEANING APPARATUS INCORPORATING A CLEANING TOOL



(57) Abstract: A cleaning tool (10) comprises a handle (12); a head portion (14) connected to the handle (12); and a cleaning element (30) carried on the head. The cleaning element (30) has an outer surface suitably composed to effect cleaning of an article such as a toilet bowl. In an embodiment, the cleaning element (30) is a frusto-conical paper element. The tool further comprises a release means (40) which is operable by a user to release the cleaning element (30) from the head portion (14) without the user making contact with the cleaning element (30). This may be achieved by displacing a part (28) of the head portion (14) to dislodge the cleaning element. Cleaning apparatus comprises such a cleaning tool (10) and a stand component (50). The stand component (50) has receptacles in which the tool (10) and a stack (66) of cleaning elements (30) can be stored. The stack (66) of cleaning elements may be contained within a consumer product package in which they were sold to a consumer.

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A CLEANING TOOL AND CLEANING APPARATUS INCORPORATING A CLEANING TOOL

Introduction

The present invention relates to a cleaning tool and apparatus incorporating a cleaning tool. More particularly, this invention relates to a cleaning tool having a replaceable cleaning element, and apparatus for use with such a tool.

There are situations in which cleaning tools become contaminated during use. Such contamination might be bacterial, chemical, or otherwise. In such situations, the contaminated cleaning tool can present a health hazard.

A particular example of such a tool commonly found in a domestic environment is a toilet cleaning brush. In use, these brushes are exposed to bacteriological contamination. Inevitably, some contaminated matter will be removed from the toilet bowl on the brush. After use, there is a risk that the contamination will spread into the environment surrounding the place at which the brush is stored.

Other toilet cleaning devices are known and described in GB 1 532 457, EP 0 078 123 and GB 2 291 798. WO 87/00411 describes a toilet cleaning device comprising a handle and a bifurcated paddle which functions during use to carry an elongated sleeve-like cleaning element. The handle includes a collar which is slidably mounted at the top of the paddle and which when moved down the paddle acts to bring the prongs of the paddle closer together. In this manner the paddle width is sufficiently reduced to allow it be inserted

into a cleaning sleeve, wherupon release of the collar returns the prongs to the original position whereby the sleeve is gripped by the outwardly biassed prongs. A number of problems are associated with this device. First it is of relatively complicated construction and involves a considerable degree of accuracy and dexterity to position the cleaning sleeve on the paddle. In addition, the shape of the paddle and cleaning sleeve are not ideal for the cleaning of curved surfaces such as are found on a toilet bowl, and the longitudinal dimensions are not really suitable for the cleaning of toilet bowls which tend to be quite shallow. Furthermore, the storage of a number of the cleaning elements side by side as shown in Figure 11 of this prior art added to the narrow mouth of the cleaning elements make it difficult mount a cleaning sleeve of the paddle.

An aim of the invention is to provide a cleaning tool which overcomes at least some of the above problems.

Statements of Invention

Accordingly, from a first aspect, the invention provides a cleaning tool comprising a handle, a head connected to the handle, the head being dimensioned to carry a similarly dimensioned cleaning element thereon, wherein the head includes a conical portion, which tapers away from the handle. In this specification the term conical should be taken as including not only conical bodies having a round cross section, but also frustoconical bodies, and other types of polygonal cones or frustums. Thus for example the term should be taken to include inverted pyramidal shapes which have a square, rectangular or other polygonal cross section, and frustums thereof.

A cleaning tool formed in accordance with the invention has a number of advantages over those of the prior art. As the head is conical, it is easier to insert in a similarly dimensioned cleaning element. This is due to the fact that as the cleaning element will also be conically shaped, it will have quite a large open mouth into which the cleaning head is easily inserted. In addition the conical shape of the head provides a large surface area to which the cleaning element, during use, can attach to. Furthermore, as the cleaning elements will be conically shaped they are easily storable in a nesting arrangement, which provides excellent use of space and exposes only a top element of the nest to the atmosphere.

In one embodiment of the invention, the tool includes release means, which is operable by a user to release a cleaning element from the head without the user handling the cleaning element.

Thus, a user can dispose of the cleaning element after use safely, without the risk of his or her hands being contaminated through handling of the soiled cleaning element.

Typically, the head is conical and has a round or curved cross-section. Such an embodiment allows for easier cleaning of curved surfaces in the toilet bowl.

The invention also provides a cleaning element for a cleaning tool according to the invention, the cleaning element comprising a conical sleeve which is comprised of a material which is easily disposable by flushing in a toilet bowl. The term "conical" as used in the above statement should be construed in accordance with the definition given

previously. Most typically, the cleaning element is intended for disposal after each use, in order to avoid the risks that might arise from storage of a soiled cleaning element. Preferably, the cleaning element is constructed as to be disposable by flushing in a toilet bowl. When the tool is used to clean a toilet, this ensures that safe and convenient disposal is readily possible. In a preferred embodiment, the cleaning element is formed of impregnated paper. The cleaning element may be impregnated with at least one of a bleach, a biocide or a perfume. The invention also relates to a nested stack of cleaning elements for use with a cleaning tool according to the invention, which nested stack is typically packaged in the form of a re-fill pack.

The head may include a support for the cleaning element. Preferably, the support is formed of resiliently deformable material. This helps ensure a good contact between the cleaning element and the surface being cleaned. For example, the resiliently deformable material may be a foam such as an expanded polyurethane foam. Preferably, the resilient material is formed with a relatively water-impermeable skin to reduce the risk of it becoming contaminated through use.

In a preferred embodiment, the release means operates to displace a portion of the head, thereby dislodging the cleaning element.

Typically, the release means is operated by a user control on the handle.

In a preferred construction, the release means includes a one-piece component, a first part of which constitutes the user control, and a second part on which constitutes a portion of the head. Additionally, the first and second parts of the one-piece component may be interconnected by a

third part, the third part being elongate and flexible. The one-piece component may conveniently be a moulding of plastic material. This form of construction may be advantageously simple in manufacture.

From another aspect, the invention provides cleaning apparatus comprising a cleaning tool embodying the first aspect of the invention and a stand component, the stand component having receptacles in which the tool and a plurality of cleaning elements can be stored. Generally the apparatus will include a plurality of cleaning elements which typically will be in a nested orientation.

The cleaning elements can preferably be stored in a stack within the cleaning apparatus. In a convenient arrangement, the stack is positioned such that a user can place the head of the tool onto a free end of the stack, and thereby pick up one of the cleaning elements on the head in preparation for use of the tool. The stack may be contained within a shell component. Advantageously, the shell component is part of a consumer product package.

Detailed Description of the Invention

An embodiment of the invention will now be described in detail and with reference to the accompanying drawings, in which:

Figure 1 is a view from above of a cleaning tool being a first embodiment of the invention, the tool being shown prior to the fitting of a cleaning head;

Figure 2 is a view from one side, partly sectioned, of the cleaning tool of Figure 1 with the cleaning head in place;

Figure 3 shows the tool of Figures 1 and 2 from one end;

Figure 4 is a view from one side, partly sectioned, of a cleaning apparatus incorporating the tool of Figures 1 to 3;

Figure 5 is a view from above of a stand component of the apparatus of Figure 4;

Figure 6 is a transverse sectional view of a disposable cleaning element for the tool of Figures 1 to 3;

Figure 7 is a transverse sectional view of a stack of cleaning elements, each as shown in Figure 6; and

Figure 8 shows a product package suitable for containing a stack as shown in Figure 7.

With reference first to Figures 1 to 3, a cleaning tool 10 comprises an elongate handle 12 and a head portion 14 extending from the handle 12. The handle 12 includes a grip region 16 suitably shaped to enable it to be securely gripped by a user. In this example, strips 17 of soft plastic are co-moulded into the grip region 16 to enhance its ability to be gripped by the user.

The head portion 14 includes a frusto-conical core part 18 that tapers in a direction away from the handle 12. The core part 18 and the handle 12 can conveniently be constructed as mouldings of a suitable plastic material. In this embodiment, there are two mouldings, joined along the length of the handle 12 and the head portion 14 along a line 22. A duct of cylindrical cross-section is formed between the mouldings. An end of the duct opens at an end surface of the

core part 18. A cylindrical spigot 20 extends axially from within the duct to project from the core part 18.

For use, a cleaning head is carried on the head portion 14. Figure 1 shows the tool 10 with the cleaning head removed. The head is shown in Figure 2. The cleaning head includes a carrier 26 of resilient material, insert moulded, co-moulded or adhered, as appropriate, on the core part 18. The carrier 26 surrounds an outer conical surface of the core part 18, such that the core part 18 is covered with a layer of resilient material. Additionally, there is mounted on the spigot 20 a body 28 of the same material as the carrier 26. The body 28 is approximately frusto-conical, with a slightly convex end surface. The body 28 and the carrier 26 are so shaped that they can fit together to form a generally frusto-conical supporting body, with a substantially continuous outer surface.

The carrier 26 is most preferably formed from a material that is resistant to absorption of water. In this embodiment, a self-skinning expanded polyurethane foam was used. In practice, suitable other materials may be chosen.

A cleaning element 30 (see also, Figure 6) is carried on the supporting body made up from the carrier 26 and the body 28. The cleaning element 30 is shaped and dimensioned to be a close fit on the supporting body. The cleaning element 30 has an outer surface that has a suitable texture and composition to enable it to be used to clean an article. The cleaning element 30 may be made of paper impregnated with, for example, a bleach, an antibacterial composition, a perfume, or other compositions, which may be activated when, brought into contact with water.

The tool 10, when assembled as described can be used to clean an article much in the same manner as can a brush. A particular application of a tool 10 such as this is to clean a toilet bowl. For use in this application, the cleaning element is preferably formed from a material that is suitable for disposal by flushing in the toilet bowl.

The cleaning element 30 is intended to be used only a very limited number of times (typically just once) before being removed from the supporting body and discarded.

In order that the user does not have to touch the cleaning element 30 during its removal, a release mechanism is provided. Operable by the user, the release mechanism allows the cleaning element 30 to be removed remotely.

The release mechanism is operated by a thumb knob 40 carried on the handle 12 of the tool 10. A flexible elongate element is connected to the thumb knob internally of the handle 12, and from there it extends through the duct to connect with the spigot 20. The thumb knob 40 can slide a short distance lengthways of the handle 12. It is biased by a spring (not shown) to the limit of its travel away from the head portion 14. In this rest position, the spigot 20 is retracted into the core 18, and the body 28 rests in contact with the carrier 26. To release a cleaning element, a user urges the thumb knob 40 towards the head portion 14. This motion is transmitted by the elongate element to cause the spigot 20 to extend from the core 16, carrying the body 28 with it. In turn, this pulls the cleaning element away from the carrier, whereupon it can fall away from the head portion 14.

In this embodiment, the thumb knob 40, the flexible elongate element, and the spigot 20 are formed as a one-piece moulding of polypropylene.

The tool 10 may be incorporated into cleaning apparatus, an example of which is shown in Figure 4.

The cleaning apparatus includes a stand 50 (see also, Figure 5) which is intended to rest on a flat surface such as a floor. In this example, the stand 50 is ovoid in plan and an upper surface 52 of the stand is shaped with a convex curvature.

A first recess 54 is formed within the stand, an upper end of the first recess 54 opening to the upper surface 52 of the stand 50. The first recess 54 is generally frusto-conical in shape and has a concave bottom surface. The first recess 54 is shaped and dimensioned to receive the head portion 14 of the cleaning tool 10 as a close fit. As shown in Figure 4, once the head is within the first recess 54, the cleaning tool 10 is conveniently located in the stand, where it can be stored ready for use.

Adjacent to the first recess 54, a second recess 60 is formed. The second recess 60 likewise has an opening to the upper surface 52 of the stand 50. The second recess 60 is predominantly cylindrical. Two projections 62 extend upwardly from the base of the second recess 60. The projections 62 are arcuate in plan and have facing wall portions 64 that taper downwardly towards one another, so loosely defining a frusto-conical space between the projections 60.

As shown in Figure 4, a supply of cleaning elements 30, placed one inside the other as shown in Figure 7 to form a stack 66, can be stored in the second recess 62. The facing wall portions 64 of the projections 62 serve to support the tapered surfaces of the cleaning elements 30.

Conveniently, the stack 66 is retained within a shell moulding 68. The shell moulding 68 has an outer cylindrical wall, dimensioned to fit closely within the second recess 60. Internally, the wall is dimensioned to receive cleaning elements. A base of the shell moulding 68 has a projection that extends axially into the moulding. The projection 70 has an outer cylindrical portion that is dimensioned to fit closely around the projections 62 in the base of the second recess 60. Centrally, the projection 70 has a frusto-conical concavity into which cleaning elements 30 can be received.

The shell moulding 68 can be constructed to be a consumer package, as shown in Figure 8. That is to say, consumers will be offered replacement cleaning elements 30 packaged within a shell moulding 68. As such, the shell moulding will be provided with a closure 72 for its end opposite the base. The closure 72 is opened or removed for use, and re-closed or replaced to protect the still-unused cleaning elements 30. Furthermore, the outer wall of the shell moulding 68 may have product identification or other indicia formed on it.

For use, a user places within the base 50 a stack 66 of cleaning elements 30 contained in a shell moulding 68. The closure 72 is opened or removed, as appropriate, from the shell moulding 68. The user then lifts the cleaning tool 10 from its storage position in the first recess 54. Next, the user dips the head portion 14 of the cleaning tool 10 into the top of the stack 66 of cleaning elements 30. The uppermost one of the cleaning elements 30 is then picked up by the head, whereupon the cleaning tool 10 is ready for use. The closure 72 is then re-closed or replaced.

After use, the user operates the thumb knob 40 to release the cleaning element 30. This operation can be performed

over a suitable waste receptacle so that the user need not touch the used cleaning element 30. This permits the safe and immediate disposal of the part of the cleaning tool 10 most likely to be contaminated. When the cleaning element 30 is made of a suitable material, the user may perform the operation over a toilet bowl and subsequently dispose of the cleaning element by flushing the toilet.

Once all of the cleaning members 30 have been used, the user can replace them conveniently by removing and discarding the empty shell moulding 68, and replacing it with a new, full one. There is no need for the user to handle the cleaning elements 30 directly.

Claims

1. A cleaning tool comprising a handle, a head connected to the handle, the head being dimensioned for carrying a similarly shaped cleaning element thereon, wherein the head includes a conical portion which tapers inwardly away from the handle.

2. A cleaning toll as claimed in claim 1 in which the head is frustoconical.

3. A tool as claimed in claims 1 or 2 further comprising a release means which is operable by a user to release a cleaning element from the head without the user making contact with the cleaning element.

4. A cleaning tool according to any preceding claim in which the head includes a support for the cleaning element, the support being formed of resiliently deformable material.

5. A cleaning tool according to claim 4 in which the resiliently deformable material is a foam.

6. A cleaning tool according to claim 5 in which the foam is an expanded polyurethane foam.

7. A cleaning tool according to any one of claims 4 to 6 in which the resiliently deformable material is formed with a relatively water-impermeable skin.

8. A cleaning tool according to any preceding claim in which the release means operates to displace a lower portion of the head away from the head, thereby dislodging the cleaning element.

9. A cleaning tool according to any preceding claim in which the release means is operated by means of a user control on the handle.

10. A cleaning tool according to claim 8 or 9 in which the release means includes a one-piece component, a first part of which constitutes the user control, and a second part on which constitutes a portion of the head.

11. A cleaning tool according to claim 10 in which the first and second parts of the one-piece component are interconnected by a third part, the third part being elongate and flexible.

12. A cleaning element for a cleaning tool according to any previous claim comprising a conical element having an outer surface suitably composed to effect cleaning of an article, the cleaning element being constructed to be disposable by flushing in a toilet bowl.

13. A cleaning tool according to claim 12 in which the cleaning element is intended for disposal after use.

14. A cleaning tool according to claims 12 or 13 in which the cleaning element is formed of impregnated paper.

15. A cleaning tool according to any of claims 12 to 14 in which the cleaning element is impregnated with at least one of a bleach, a biocide or a perfume.

16. A plurality of cleaning elements according to any of claims 12 to 15 nested together and packaged.

17. A cleaning tool according to any of claim 1 to 11 in combination with a cleaning element according to any of claims 12 to 15 or a plurality of cleaning elements according to claim 16.

18. Cleaning apparatus comprising a cleaning tool according to any of claims 1 to 15 and a stand component, the stand component having receptacles in which the tool and a plurality of cleaning elements can be stored.

19. Cleaning apparatus according to claim 18 in which the cleaning elements can be stored in a nested stack.

20. Cleaning apparatus according to claim 19 in which the stack is positioned such that a user can place the head of the tool onto a free end of the stack, and thereby pick up one of the cleaning elements on the head in preparation for use of the tool.

21. Cleaning apparatus according to claim 19 or claim 20 in which the stack is contained within a shell component.

22. Cleaning apparatus according to claim 21 in which the shell component is part of a consumer product package.

23. Cleaning apparatus substantially as herein described with reference to the accompanying drawings.

Fig.1.

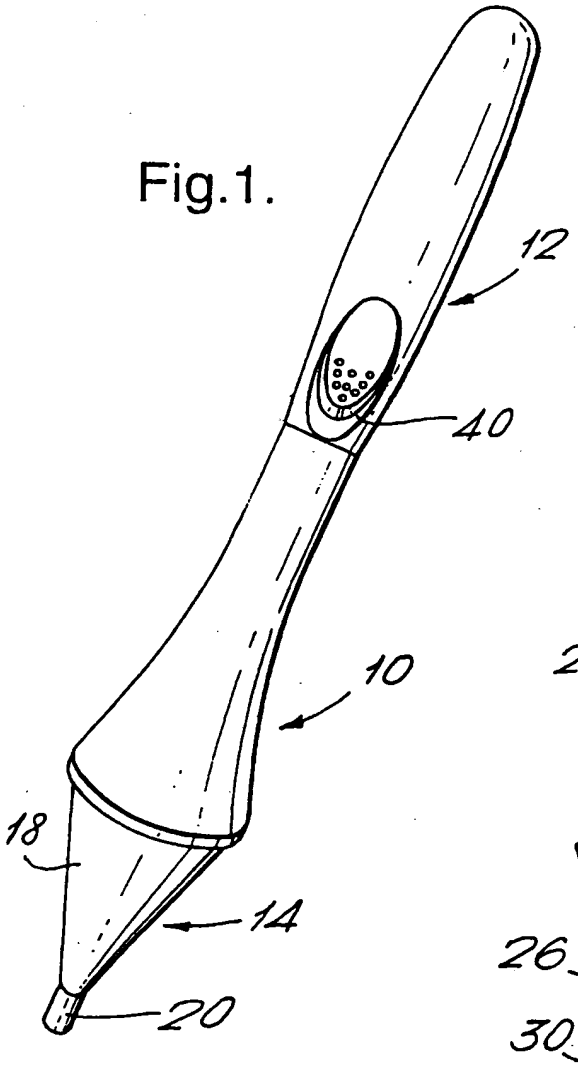


Fig.2.

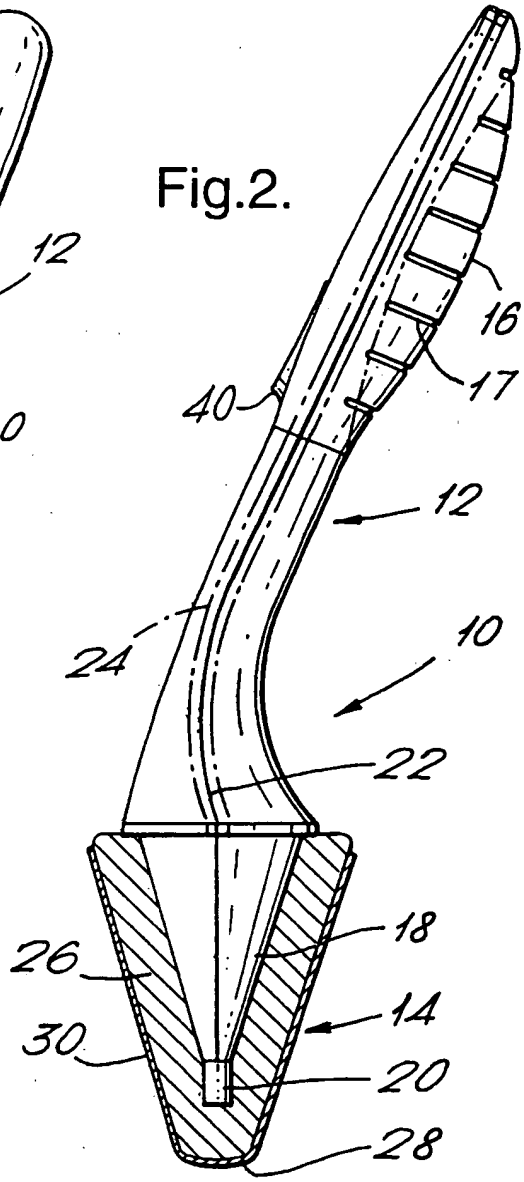


Fig.3.

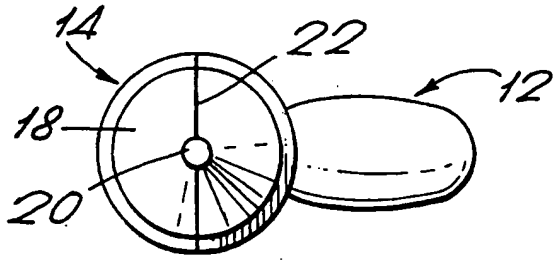


Fig.4.

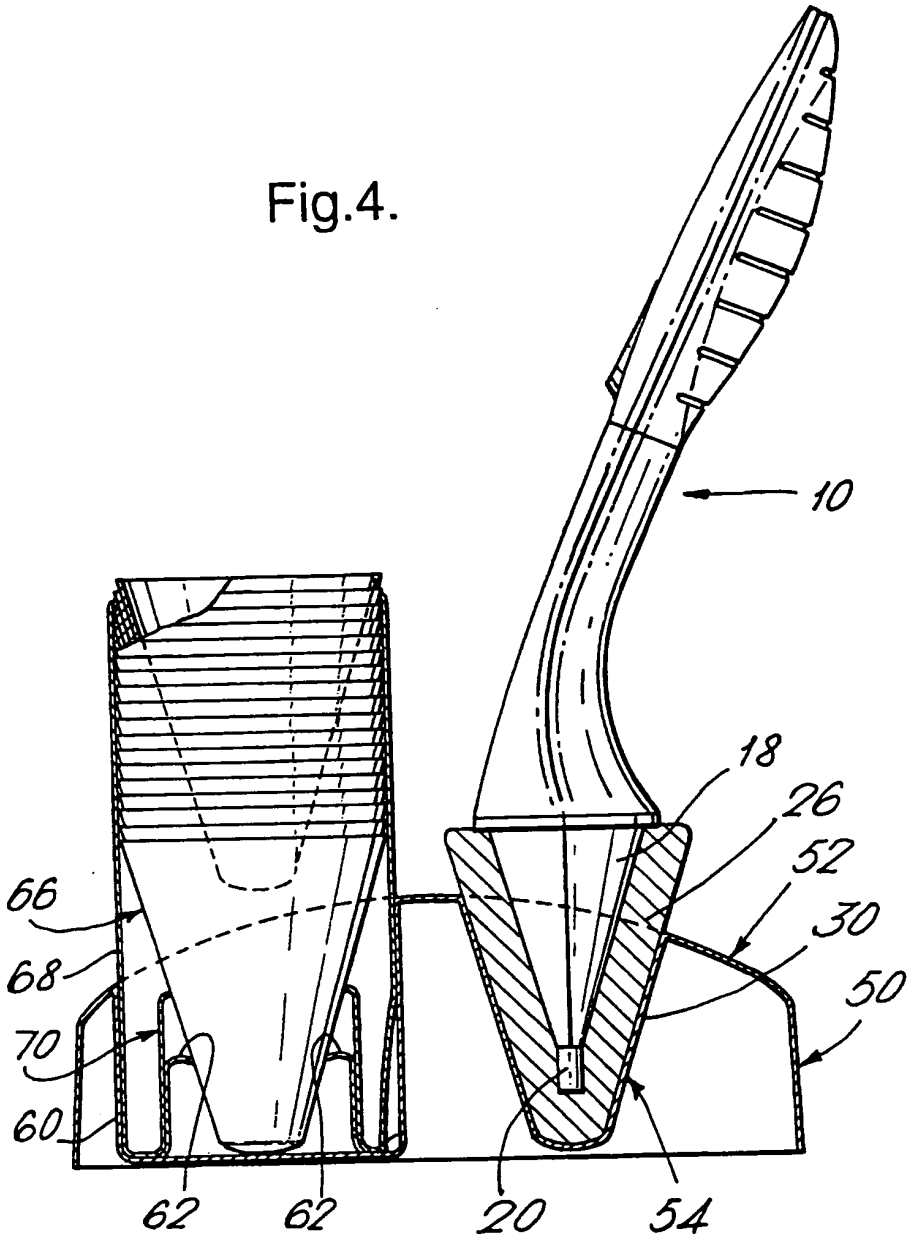


Fig.5.

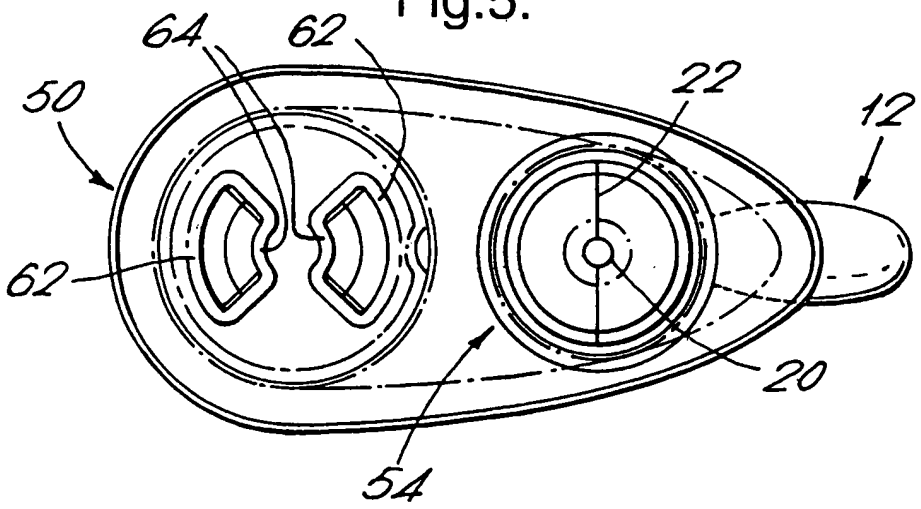
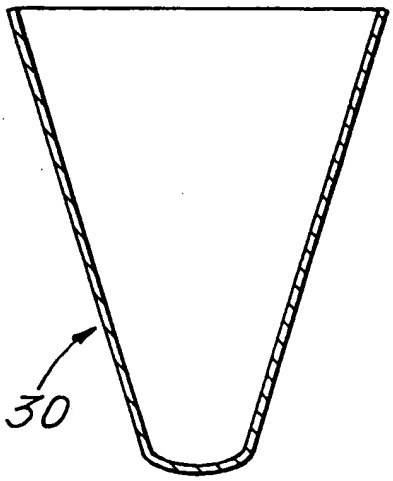


Fig.6.



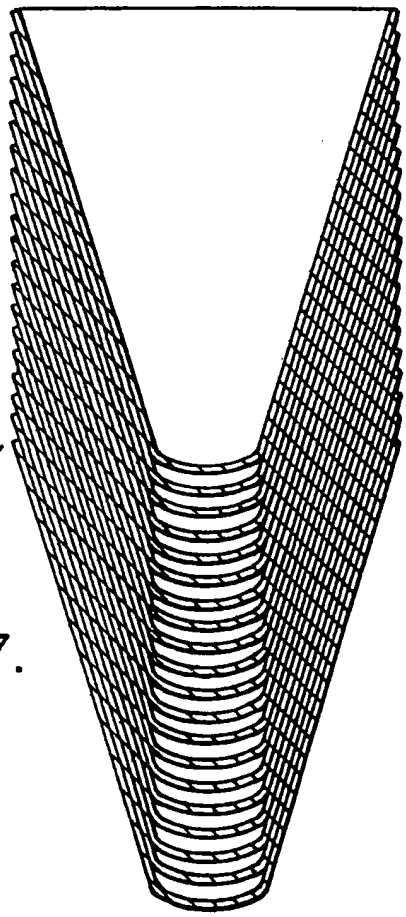
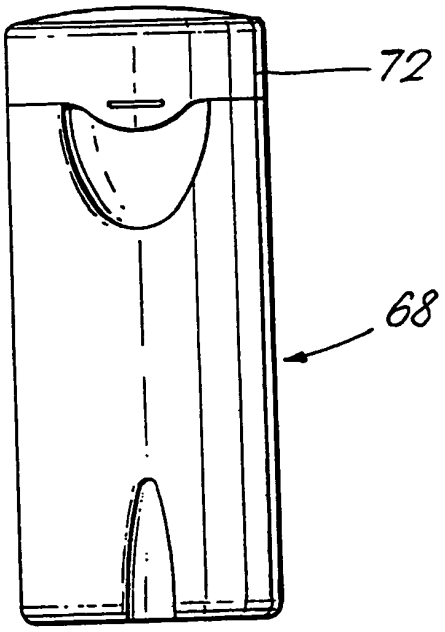


Fig.7.

Fig.8.



INTERNATIONAL SEARCH REPORT

Interr. .ial Application No
PCT/EP 00/04387

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A47K11/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A47K A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 325 849 A (SAYLES) 9 December 1998 (1998-12-09) page 2, line 2 -page 3, line 33; claims; figures ---	1,12-15, 17,18
A	DE 297 16 839 U (EGELING) 13 November 1997 (1997-11-13) page 9, line 20 -page 12, line 22 page 15, line 36 -page 18, line 19; claims; figures --- -/--	1,3, 8-10, 12-14, 16,17, 19,20

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
28 August 2000	05/09/2000

Name and mailing address of the ISA	Authorized officer
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Interr. nal Application No
PCT/EP 00/04387

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 97 45050 A (EGOLF) 4 December 1997 (1997-12-04) page 3, last paragraph -page 8; figures	1-3, 8-10, 12-14, 16-22
A	EP 0 568 150 A (TOSATO) 3 November 1993 (1993-11-03) column 2, line 6 -column 4, line 16; figures	1,3,9-11
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